Amendments to the Claims

1-20. (Canceled)

21. (Currently amended) A method of ~~using a two-way actuator~~ <u>providing two-way actuation</u>, comprising the steps of:

(a) providing a two-way actuator formed of a composite material, wherein the composite material comprises:

(i) a first component comprising a first shape memory alloy; and

(ii) a second component comprising an elastic metal;

wherein the first component and the second component are metallurgically bonded together to form the composite material;

wherein the two-way actuator has a first shape at a temperature equal to or above a temperature A_f at which transformation of the first component from martensite to austenite is complete, and a second shape at a temperature equal to or below a temperature M_f at which transformation of the first component from austenite to martensite is complete;

wherein at a temperature equal to or above A_f, the first shape memory alloy exerts a force against the second component which elastically deforms the second component so that the two-way actuator has the first shape; and

wherein at a temperature equal to or below M_f, the force from the first shape memory alloy is at least partially released and a bias force of the second component acting on the first shape memory alloy returns the two-way actuator to the second shape;

(b) cooling the composite material to a low cycling temperature equal to or below M_f of the first component; and

(c) heating the composite material to a high cycling temperature equal to or above A_f of the first component, wherein the high cycling temperature is body temperature.

22. (Previously presented) The method of claim 21, further comprising the step of cooling the composite material to a temperature equal to or below M_f of the first component after the step of heating the composite material.

23. (Currently amended) The method of claim 21, wherein heating the composite material comprises bringing the composite material into contact with a subject's body tissue.

24. (Currently amended) The method of claim 21, wherein A_f and M_f allow actuation of the two-way actuator at temperatures suitable for use on a subject's body tissue.

25. (Previously presented) The method of claim 24, wherein A_f is less than approximately body temperature.

26. (Previously presented) The method of claim 24, wherein M_f is greater than approximately 0° C.

27. (Currently amended) A method of ~~using a two-way actuator~~ providing two-way actuation, comprising the steps of:

(a) providing a two-way actuator formed of a composite material, wherein the composite material comprises:

(i) a first component comprising a first shape memory alloy; and

(ii) a second component comprising an elastic metal;

wherein the first component and the second component are metallurgically bonded together to form the composite material;

wherein the two-way actuator has a first shape at a temperature equal to or above a temperature A_f at which transformation of the first component from martensite to austenite is complete, and a second shape at a temperature equal to or below a temperature M_f at which transformation of the first component from austenite to martensite is complete;

wherein at a temperature equal to or above A_f, the first shape memory alloy exerts a force against the second component which elastically deforms the second component so that the two-way actuator has the first shape; and

wherein at a temperature equal to or below M_f, the force from the first shape memory alloy is at least partially released and a bias force of the second component acting on the first shape memory alloy returns the two-way actuator to the second shape;

(b) heating the composite material to a high cycling temperature equal to or above A_f of the first component; and

(c) cooling the composite material to a low cycling temperature equal to or below M_f of the first component, wherein the low cycling temperature is body temperature.

28. (Previously presented) The method of claim 27, further comprising the step of heating the composite material to a temperature equal to or above A_f of the first component after the step of cooling the composite material.

29. (Currently amended) The method of claim 27, wherein cooling the composite material comprises bringing the composite material into contact with a subject's body <u>tissue</u>.

30. (Currently amended) The method of claim 27, wherein A_f and M_f allow actuation of the two-way actuator at temperatures suitable for use on a subject's body <u>tissue</u>.

31. (Previously presented) The method of claim 30, wherein A_f is less than approximately 100° C.

32. (Previously presented) The method of claim 30, wherein M_f is greater than approximately body temperature.

33. (Currently amended) A method of ~~using a two-way actuator~~ <u>providing two-way actuation</u>, comprising the steps of:

(a) providing a two-way actuator formed of a composite material, wherein the composite material comprises:

(i) a first component comprising a first shape memory alloy; and

(ii) a second component comprising an elastic metal;

wherein the first component and the second component are metallurgically bonded together to form the composite material;

wherein the two-way actuator has a first shape at a temperature equal to or above a temperature A_f at which transformation of the first component from martensite to austenite is complete, and a second shape at a temperature equal to or below a temperature M_f at which transformation of the first component from austenite to martensite is complete;

wherein at a temperature equal to or above A_f, the first shape memory alloy exerts a force against the second component which elastically deforms the second component so that the two-way actuator has the first shape; and

wherein at a temperature equal to or below M_f, the force from the first shape memory alloy is at least partially released and a bias force of the second component acting on the first shape memory alloy returns the two-way actuator to the second shape;

(b) introducing the two-way actuator into a subject's body;

(c) changing the temperature of the composite material to one of a temperature equal to or above A_f or a temperature equal to or below M_f; and

(d) changing the temperature of the composite material to the other of a temperature equal to or above A_f or a temperature equal to or below M_f;

wherein A_f and M_f allow actuation of the two-way actuator at temperatures suitable for use on body tissue.

34. (Previously presented) The method of claim 33, wherein M_f is greater than approximately 0° C.

35. (Previously presented) The method of claim 33, wherein A_f is less than approximately 100° C.

36. (New) A two-way actuator formed of composite material, wherein the composite material comprises:

(i) a first component comprising a first shape memory alloy; and

(ii) a second component comprising an elastic metal;

wherein said first component and said second component are metallurgically bonded together to form said composite material;

wherein said two-way actuator has a first shape at a temperature equal to or above a temperature A_f at which transformation of the first component from martensite to austenite is complete, and said two-way actuator has a second shape at a temperature equal to or below a temperature M_f at which transformation of the first component from austenite to martensite is complete;

wherein at a temperature equal to or above A_f, said first shape memory alloy exerts a force against said second component which elastically deforms said second component so that said two-way actuator has said first shape;

wherein at a temperature equal to or below M_f, said force from said first shape memory alloy is at least partially released and a bias force of said second component acting on said first shape memory alloy returns the two-way actuator to said second shape; and

wherein A_f and M_f allow actuation of the two-way actuator at temperatures suitable for use on a subject's body tissue.

37. (New) The two-way actuator of claim 6, wherein M_f is greater than approximately 0° C.

38. (New) The two-way actuator of claim 6, wherein M_f is greater than approximately body temperature.

39. (New) The two-way actuator of claim 6, wherein A_f is less than approximately 100° C.

40. (New) The two-way actuator of claim 6, wherein the first component is nitinol.

41. (New) The two-way actuator of claim 6, wherein the second component is selected from the group consisting of a second shape memory alloy, stainless steel, cobalt alloy, refractory metal or alloy, precious metal, titanium alloy, nickel superalloy, and combinations thereof.

42. (New) The two-way actuator of claim 41, wherein the second component is selected from the group consisting of nitinol, stainless steel 316, austenitic stainless steels, precipitation hardenable steels including 17-4PH, 15-4PH and 13-8Mo, MP35N, ELGILOY®, Ta, Ta-10W,

W, W--Re, Nb, Nb1Zr, C-103, Cb-752, FS-85, T-111, Pt, Pd, beta Ti, Ti6A14V, Ti5A12.5Sn, Beta C, Beta III, and FLEXIUM®.

43. (New) The two-way actuator of claim 36, wherein the first component and the second component form a bi-layer, tri-layer, or intermittent layer structure.

44. (New) The two-way actuator of claim 43, wherein the layered structure forms a tube.

45. (New) The two-way actuator of claim 43, wherein the layered structure forms a sheet.

46. (New) The two-way actuator of claim 43, wherein the layered structure has at least four layers.

47. (New) The two-way actuator of claim 36, wherein the first component and the second component form a multilayered solid clad structure.

48. (New) The two-way actuator of claim 47, wherein the first component is clad around a core of the second component.

49. (New) The two-way actuator of claim 47, wherein the second component is clad around the first component.

50. (New) The two-way actuator of claim 36, formed into a spring, coil, rod, wire, beam, strip, membrane, or washer.